

# Gradient Descent

## <Gradient Descent>

• How do I take a "loss function" and turn it into a search strategy?  
(That's where Gradient Descent comes in)

### • Gradient Descent

: Refers to the process of walking down the surface formed by using our loss function on all the points in parameter space.

\* we'll only know loss values at the points in parameter space

where we've evaluated our loss function.

(While the loss is greater than a tiny constant compute the direction.)

And then for ~~search~~ each parameter in the model,

Set its value to be the old value plus the product of the step size and the direction.

Then finally re-compute the loss.

The slope or the rate at which the curve

→ gives us a descent sense of how far to step and the direction at the same time.

## <Troubleshooting a Loss Curve>

Generally, though,

learning rate is a fraction significantly less than one.

Remember this formulation of gradient descent, and that learning rate is a hyperparameter that is fixed during training.